

REMARKS

Applicant gratefully acknowledges the withdrawal of the rejection of claims 1-13, 14, 18-32 as obvious over Edlund v. Yamase; the rejection of claim 14 as obvious over Edlund v. Yamase v. O'Brien; and the rejection of claims 16 and 17 as obvious over Edlund v. Yamase v. Fukuoka.

Claim Objections

Applicant acknowledges the renumbering of the claims. New claims have been submitted which are believed to render this issue moot.

Objection to Abstract

The examiner objects to the abstract as in improper form. The abstract has been amended, and is believed to be acceptable.

Objection to the specification

The examiner suggested that the specification be amended to provide section headings. Appropriate amendments are submitted herewith. Applicant respectfully requests that any objection to the specification on this basis be withdrawn.

Rejection of Claims 1-33 under 35 U.S.C. § 112

The examiner rejected claims 1-33 as indefinite.

Claims 1-33 have been canceled and new claims 34-98 have been added. The amended claims are believed to overcome the rejections.

To the extent that new terminology appears in the claims, the terminology does not add "new matter." For example, the limitation that the method produces "one or more liquid hydrocarbon product" in claims 34-81, has support in the specification as seen below:

There is, however, a need to be able to produce hydrogen, electricity and **one or more (liquid) hydrocarbon products** in an integrated process. In particular, there is a need for a process which will allow operators flexibility with respect to the relative amounts of the three key products (hydrogen, electricity and (liquid) hydrocarbon product(s)) to be obtained.

Specification, p. 3, ll. 13-19 (emphasis added).¹

¹ See also specification, p. 1, l. 27 - p. 2, l. 22 (emphasis added):

Other amendments give a name to an element that previously appeared as a phrase. For example, the various references to "hydrogen" in the claim have been renamed as "hydrotreating hydrogen" and "product hydrogen." Similar changes are made to name elements rather than use phrases for the element for purposes of providing an antecedent basis. With respect to claim 82, and the use of supported zeolite catalyst, Applicant refers to the specification, paragraph beginning at the bottom of page 8.

Applicant respectfully requests that the rejections under 35 U.S.C. § 112 be withdrawn.

Rejection of Claims 1-13, 15, and 18-32 under 35 U.S.C. § 103 over Yamase v. Day

The examiner rejects claims 1-7, 10, and 18-19, 25, and 27-33 as obvious over Yamase in view of Day. According to the examiner

Yamase et al. in Figures 1 and 2 disclose a method for producing hydrogen and electricity from a hydrocarbonaceous feedstock, which method comprises a) subjecting the hydrocarbonaceous feedstock (kerosene, LPG or naptha which is the same hydrocarbonaceous feedstock as instantly disclosed) to a treatment (desulfurizer 1 and adsorber 2) with hydrogen in the presence of an unsupported catalyst under conditions effective to produce a hydrotreated feedstock **comprising a hydroprocessed product.**

Emphasis added.

Response

Claims 1-13, 15, and 18-32 have been canceled and new claims have been added.

New claim 34 specifies that the hydrotreated product comprises **"one or more liquid**

In view of the value of hydrocarbons, in particular **liquid hydrocarbons**, as transportation fuels, it will be clear that maximising the production of a single hydrocarbon product, whether it is gasoline or diesel, or optimising the product slate in the event that two or more valuable products are to be produced, is very important in designing refineries

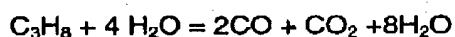
It is of course known, and well documented, that products like lower olefins and hydrogen can be produced from specific sources, which are normally of hydrocarbonaceous nature. But in such processes, the objective is to maximise the production of such products and therefore, **there is no or virtually no production of other hydrocarbonaceous products at the same time.**

For instance, a wellknown process to produce hydrogen is by gasification of methane or by electrolysis of water. **Such processes do not produce valuable liquid hydrocarbons.** Lower olefins, like propene and butene are suitably produced by (catalytic) dehydrogenation of the corresponding alkanes (propane and butane). Again such processes do not produce **valuable liquid hydrocarbons.**

hydrocarbon product.” Claims 34-81 each either directly or indirectly contain a similar limitation. The examiner has not pointed to a teaching or suggestion of a hydrotreated product comprising “one or more liquid hydrocarbon product” in Yamase.

Yamase is related to “a method for separating carbon monoxide from **reformed gas** to be fed to fuel electrode of fuel cell.” Yamase, col. 1, l. 7-8. Yamase explains:

In the reformer, hydrocarbons in raw material are converted to **product gas** mainly composed of hydrogen which comprises hydrogen, CO, and CO₂ according to the following reaction formula.



Yamase, col. 2, ll. 23-27 (emphasis added) See also col. 2, ll. 35-55.

The examiner has not pointed to a teaching or suggestion in Yamase of “subjecting hydrocarbonaceous feedstock to hydrotreating hydrogen under hydrotreating conditions effective to produce a hydrotreated product **comprising one or more liquid hydrocarbon product,**” as required by claims 34-81.

The examiner cannot establish *prima facie* obviousness of the limitations of claims 34-81 merely by arguing that the claimed result could be derived by modifying Yamase’s fuel cell electricity generation process to produce to one or more liquid hydrocarbon(s). In order to establish *prima facie* obviousness of the claims over Yamase in view of Day, or in view of any other reference, the examiner has the burden to point to a teaching or suggestion in the **references themselves** that it would be desirable to modify Yamase in the manner suggested by the examiner. MPEP 2143.01; *In re Brouwer*, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995). The examiner has not met this burden.

Day is directed to “[h]ydrocarbon conversion . . . using catalyst whose supports have been prepared by a sol-gel process.” Day, abstract. In particular, Day is said to relate to “the reforming of hydrocarbon feedstocks to produce aromatic hydrocarbons.” Day, col. 1, l. 5-7. The examiner has not pointed to any teaching or suggestion in Yamase or Day that would motivate a person of ordinary skill in the art to modify the process described in Yamase to produce a one or more liquid hydrocarbon product.

Claim 82 and claims depending therefrom include the following limitation:

subjecting hydrocarbonaceous feedstock to hydrotreating hydrogen under hydrotreating conditions comprising supported zeolite catalyst effective to produce hydroprocessed product;

The examiner admits that he has not pointed to a teaching or suggestion in Yamase to use supported catalyst. The examiner clearly has not pointed to a teaching in Yamase to use

supported zeolite catalyst. Nor has the examiner pointed to a teaching or suggestion in Day to use supported zeolite catalyst. The examiner clearly has not pointed to a teaching or suggestion that would motivate a person of ordinary skill in the art to use supported zeolite catalyst in Yamase's process.

Applicant respectfully requests that the rejection over Yamase v. Day be withdrawn.

Rejection of claims 8, 9, 12-14, 21-23 and 26 as obvious over Yamase v. Day v. Hwang

The examiner rejected claims 8, 9, 12-14, 21-23, and 26 as obvious under 35 U.S.C. 103(a) over Yamase et al. in view of Day et al. and further in view of Hwang (4,522,894).

Response

Claims 8, 9, 12-14, 21-23, and 26 have been canceled. The examiner has not pointed to a teaching or suggestion of the elements discussed above in the Hwang patent. Applicant draws the examiner's attention to Hwang, col. 6, ll. 3--19 (emphasis added):

Generally, at least about half the hydrocarbon feed stock is partially oxidized in the catalytic partial oxidation zone **to produce primarily carbon monoxide and hydrogen and the heat required for the endothermic steam reforming reaction, which takes place in the second catalyst zone.** Substantially all of the limited amount of oxygen introduced into the first catalyst zone is consumed in the catalytic partial oxidation step. At the temperatures maintained in the catalytic oxidation zone, and in the presence of the product hydrogen and catalyst utilized in the first zone, a degree of hydrocracking of unoxidized C₅ and heavier hydrocarbon feed takes place to form C₄ and lighter compounds. **The effluent gas from the first catalyst zone thus contains primarily CO, CO₂, H₂, H₂O, N₂, C₂ to C₄ and other lighter hydrocarbons, including olefins, and, depending upon the sulfur content of the feed stock, H₂S and COS.**

With reference to reformation, *see also* Hwang, col. 14, ll. 64-col. 15, l. 4:

At least some of the C₅ and heavier hydrocarbon is hydrocracked in catalyst bed 2 to lighter, C₁ to C₄ hydrocarbon fractions. **The heated, partially oxidized and hydrocracked effluent from catalyst bed 2 is then passed through steam reforming catalyst bed 4 wherein the steam reforming reaction [reaction] takes place. The product gases withdrawn via outlet B are cooled and unreacted water as well as any unreacted hydrocarbon feed is condensed and removed therefrom.**

Rejection of claims 11, 20, and 24 as obvious over Yamase v. Day v. Edlund

The examiner rejected claims 11, 20, and 24 as obvious under 35 U.S.C. 103(a) over Yamase et al. in view of Day et al. and further in view of Edlund (6,383,670).

Response

Claims 11, 20, and 24 have been canceled. The examiner has not pointed to a teaching or suggestion of the elements discussed above in the Edlund patent. Applicants respectfully request that the rejection be withdrawn.

Rejection of claims 16 17 as obvious over Yamase v. Day v. EP0214717

The examiner rejected claims 11, 20, and 24 as obvious under 35 U.S.C. 103(a) over Yamase et al. in view of Day et al. and further in view of EP0214717.

Response

Claims 11, 20, and 24 have been canceled. The examiner has not pointed to a teaching or suggestion of the elements discussed above in EP0214717. Applicants respectfully request that the rejection be withdrawn.

CONCLUSION

For all of the foregoing reasons, Applicant respectfully requests entry of the foregoing amendments, consideration and allowance of all of the pending claims.

Respectfully submitted,

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